CLAIMS

What is claimed is:

1. An actuator for moving an intraluminal shaft, the actuator comprising:
   a housing having a channel through at least a portion thereof, said channel having at least a first substantially inclined surface therein; and
   a pivotable actuator assembly coupled to said housing and having first and second spaced-apart jaws extending into said channel, said first and second jaws defining an opening of a first dimension therebetween, said actuator assembly for urging at least one of said first and second jaws against at least said first substantially inclined surface to transition said first dimension to a second dimension.

2. The actuator according to claim 1, wherein said second dimension is smaller than said first dimension.

3. The actuator according to claim 2, wherein the second dimension of said opening corresponds to a gripping dimension between said first and second spaced-apart jaws, and said first dimension corresponds to a release dimension between said first and second spaced-apart jaws.

4. The actuator according to claim 3, wherein said channel comprises:

   a release region;
   a first gripping region; and
   a first transition region between said release region and said gripping region, said first transition region including said first substantially inclined surface.

5. The actuator according to claim 4, wherein said release region has a width greater than an outside width of said first and second spaced-apart jaws.

6. The actuator according to claim 5, wherein said first gripping region has a width substantially equal to said outside width of said first and second spaced-apart jaws.

7. The actuator according to claim 4, wherein said first substantially inclined surface comprises a curved surface.

8. The actuator according to claim 4, wherein said first transition region further comprises at least a second substantially inclined surface, said first and second inclined surfaces for engaging said spaced-apart jaws respectively to reduce said first dimension.

9. The actuator according to claim 8, wherein said first transition region and said first gripping region extend in a first direction from said release region and further comprising:

a second gripping region; and

a second transition region between said release region and said second gripping region, said second transition region and gripping region extending from said release region in a second direction substantially opposite said first direction.

10. The actuator according to claim 1, wherein said channel has at least one surface positioned to limit motion of said actuator assembly.

11. An actuator for moving a medical shaft of an intraluminal device in a first direction, the actuator comprising:

a housing having a channel through at least a portion thereof and having at least a first substantially inclined surface in said channel, said channel for receiving an end portion of said medical shaft therein; and

an actuator assembly pivotably coupled to said housing and having first and second spaced-apart jaws extending into said channel, said first and second spaced-apart jaws defining an opening therebetween for receiving said medical shaft therethrough, said channel comprising:

a release region wherein said spaced-apart jaws do not engage said medical shaft;

a first engagement region wherein said spaced-apart jaws grip said medical shaft; and

a first transition region between said release region and said first engagement region for urging said spaced-apart jaws into engagement with said medical shaft.

12. An actuator according to claim 11, wherein said first transition region comprises first and second substantially opposed inclined surfaces separated by a first dimension proximate said release region and separated by a second dimension proximate said first engagement region, said second dimension being smaller than said first dimension.

13. An actuator according to claim 12, wherein movement of said first and second spaced apart jaws in a first direction causes said first and second spaced-apart jaws to move from said release region, through said first transition region to grip said medical shaft, and into said first engagement region to translationally move said medical shaft in said first direction.

14. An actuator according to claim 13, wherein said first transition region and said first engagement region extend in a first direction from said release region and further comprising:

a second engagement region; and

a second transition region between said release region and said second engagement region, said second transition region and said second engagement region extending from said release region in a second direction substantially opposite said first direction.

15. An actuator according to claim 14, wherein movement of said spaced-apart jaws in said second direction causes said spaced-apart jaws to move from said release region, through said second transition region to grip said shaft and into said second engagement region to translationally move said shaft in said second direction.

16. A method for moving an intraluminal shaft, the method comprising the steps of:

aligning said intraluminal shaft between spaced-apart jaws of a pivotable actuator assembly;

pivoting said actuator assembly in a first direction to urge said spaced-apart jaws against at least a first deflecting surface causing said spaced-apart jaws to grip said intraluminal shaft; and

further pivoting said actuator assembly in said first direction to move said intraluminal shaft in said first direction.

17. A method according to claim 16 further comprising:

pivoting said actuator assembly in a second opposite direction to urge said spaced-apart jaws against at least a second deflecting surface causing said spaced-apart jaws to grip said intraluminal shaft; and

further pivoting said actuator assembly in said second direction to move said intraluminal shaft in said second direction.

18. A control handle for moving a first intraluminal shaft configured for telescopic movement with a second intraluminal shaft, the control handle comprising:

a housing having a channel through at least a portion thereof, said channel having at least a first substantially inclined surface therein, said channel for receiving a portion of said first intraluminal shaft and a portion of said second intraluminal shaft therein, said housing having a longitudinal axis, a first end, and a second end;

a clamp disposed within said housing and configured to prevent movement of said first intraluminal shaft parallel to said axis; and

a first actuator assembly pivotably coupled to said housing and having first and second spaced-apart jaws extending into said channel, said first and second spaced apart jaws defining an opening therebetween for receiving said second intraluminal shaft therethrough, said channel comprising:

a release region, wherein said interior surfaces of the channel do not deflect said spaced-apart jaws toward closure;

a first engagement region, wherein at least one interior surface of said channel deflects said spaced apart jaws to grip said second intraluminal shaft; and

a first transition region between said release region and said first engagement region for urging said spaced-apart jaws into engagement with said second intraluminal shaft as said first actuator pivots.

19. An actuator according to claim 18, wherein said first transition region and said first engagement region extend in a first direction from said release region and further comprising:

a second engagement region; and

a second transition region between said release region and said second engagement region, said second transition region and said second engagement region extending from said release region in a second direction substantially opposite said first direction.

20. An actuator according to claim 18, wherein movement of said spaced-apart jaws in said second direction causes said spaced-apart jaws to move from said release region, through said second transition region to grip said second intraluminal shaft and into said second engagement region to translationally move said second intraluminal shaft in said second direction.

21. An actuator according to claim 18, wherein said first intraluminal shaft is an outer hollow member and said second intraluminal shaft is an inner member coaxially moveable within said outer hollow member.

22. An actuator according to claim 18 wherein said second intraluminal shaft is an outer hollow member and said first intraluminal shaft is an inner member coaxially moveable within said outer hollow member.